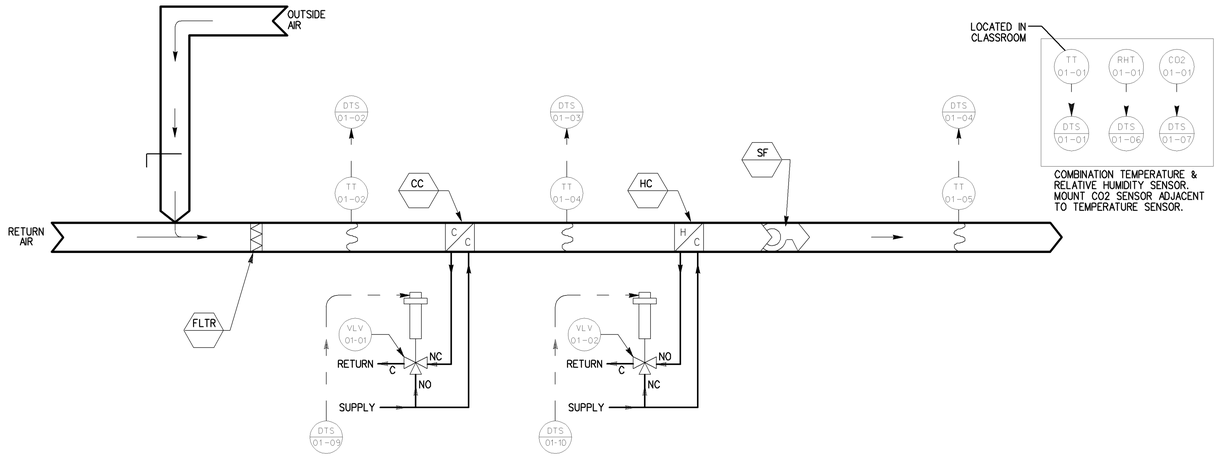


## SEQUENCE OF OPERATION

FAN CONTROL

OCCUPIED MODE - THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY.

UNOCCUPIED MODE - THE SUPPLY FAN SHALL CYCLE ON IN RESPONSE TO A CALL FOR HEAT OR DEHUMIDIFICATION, ACCORDING TO THE NIGHT SETBACK SCHEDULE. THE FAN SHALL START AND STOP AT THE SETPOINTS AS SHOWN.

REHEATING & COOLING COIL CONTROL

OCCUPIED MODE - THE COOLING & REHEAT COIL CONTROL VALVES SHALL BE MODULATED BY THE DDC SYSTEM FROM THE SIGNAL OF THE SPACE TEMPERATURE SENSOR TO MAINTAIN THE SETPOINT AS SHOWN. IF THE ROOM RELATIVE HUMIDITY RISES ABOVE THE SET POINT THE COOLING COIL DISCHARGE AIR TEMPERATURE WILL BE RESET TO 55 DEGREES F, AND THE REHEAT COIL VALVE WILL MODULATE TO MAINTAIN THE ROOM TEMPERATURE SETPOINT. WHEN THE ROOM RELATIVE HUMIDITY DROPS TO 50% REVERT TO NORMAL CONTROL.

UNOCCUPIED MODE - THE COOLING COIL CONTROL VALVE SHALL REMAIN CLOSED. WHEN SPACE TEMPERATURE DROPS BELOW THE NIGHT SET BACK SETPOINT THE REHEAT COIL CONTROL VALVE SHALL BE MODULATED BY THE DDC SYSTEM TO MAINTAIN THE SETPOINTS AS SHOWN. IF THE ROOM RELATIVE HUMIDITY RISES ABOVE THE SET POINT THE COOLING COIL DISCHARGE AIR TEMPERATURE WILL BE RESET TO 55 DEGREES F, AND THE REHEAT COIL VALVE WILL MODULATE TO MAINTAIN THE ROOM TEMPERATURE SETPOINT. WHEN THE ROOM RELATIVE HUMIDITY DROPS TO 50% REVERT TO NORMAL CONTROL.

CO2

GENERATE AN ALARM IF THE DIFFERENCE BETWEEN OA CO2 LEVEL AND THE SPACE CO2 LEVEL EXCEEDS THE SETPOINT INDICATED ON THE OPERATING PARAMETERS SCHEDULE.

EMERGENCY FAN SHUTDOWN

AN EMERGENCY HVAC SYSTEM SHUTDOWN SWITCH SHALL BE PROVIDED AS SHOWN ON PLATE M-101 TO SHUT DOWN THE ENTIRE HVAC SYSTEM. EMERGENCY SWITCH SHALL BE A RED PUSH BUTTON TYPE LABELED "EMERGENCY VENTILATION SHUTDOWN". SWITCH SHALL BE ENCLOSED IN A TAMPER RESISTANT BUT ACCESSIBLE ENCLOSURE SUCH AS A "BREAK GLASS" TYPE ENCLOSURE. EMERGENCY SWITCH SHALL SHUT DOWN ALL FAN COIL UNITS, AHU-1 AND INTERLOCKED EXHAUST FANS. SWITCH SHALL ALSO CLOSE THE OUTSIDE AIR INTAKE DAMPER.

SENSOR SCHEDULE

| IDENTIFIER | FUNCTION | RANGE |
|---|---|---|
| TT-01-01 | SPACE TEMPERATURE TRANSMITTER | 40 TO 140 DEG F |
| TT-01-04 | COOLING COIL LEAVING AIR TEMPERATURE TRANSMITTER | 40 TO 140 DEG F |
| TT-01-05 | REHEAT COIL LEAVING AIR TEMPERATURE TRANSMITTER | 40 TO 140 DEG F |
| RHT-01-01 | SPACE RELATIVE HUMIDITY TRANSMITTER | 0 TO 100 % RH |
| CO2-01-01 | SPACE CARBON DIOXIDE TRANSMITTER | 0 TO 2,000 PPM |

CONTROL VALVE SCHEDULE

| IDENTIFIER | FUNCTION | TYPE | RANGE | Cv* | CLOSE-OFF RATING | REMARKS |
|---|---|---|---|---|---|---|
| VLV-01-02 | COOLING COIL VALVE | 3-WAY, MODULATING | 4 - 20 ma | 65.0 | 39 PSI | |
| VLV-01-03 | REHEAT COIL VALVE | 3-WAY, MODULATING | 4 - 20 ma | 30.0 | 26 PSI | |
| | | | | | | |

* GPM @ delta P = 1 PSI

OPERATING PARAMETERS

| FUNCTION | SETPOINT | REMARKS |
|---|---|---|
| SPACE TEMPERATURE | 78 DEG F<br>68 DEG F | (HEATING)<br>(COOLING) |
| SPACE TEMP. (NIGHT SETBACK) | 55 DEG F | (HEATING ONLY) |
| RELATIVE HUMIDITY | 60% RH | |
| CO2 | 500 PPM DELTA | GENERATE AN ALARM IF THE DIFFERENCE BETWEEN OA CO2 LEVEL AND THE SPACE CO2 LEVEL EXCEEDS THE SETPOINT |
| OCCUPIED MODE | | 7 DAYS/WEEK : 0600 HRS - 1800 HRS |

DDC DATA TERMINAL STRIP LAYOUT

| | DEVICE NO. | DESCRIPTION | TYPE |
|---|---|---|---|
| 1 | TT-01-01 | SPACE TEMPERATURE | AI |
| 2 | TT-01-02 | MIXED AIR TEMPERATURE | AI |
| 3 | TT-01-04 | COOLING COIL LAT | AI |
| 4 | TT-01-05 | SUPPLY AIR TEMPERATURE | AI |
| 5 | | | |
| 6 | RHT-01-01 | RELATIVE HUMIDITY SENSOR | AI |
| 7 | CO2-01-01 | CARBON DIOXIDE SENSOR | AI |
| 8 | | | |
| 9 | VLV-01-01 | COOLING COIL VALVE | AO |
| 10 | VLV-01-02 | REHEAT COIL VALVE | AO |

| | HARDWARE | | | | | | | | | | | | | | SOFTWARE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OUTPUT | | | | | | | | INPUT | | | | | | | | ALARMS | | | | APPLICATION PROGRAMS | | | | | | | | | |
| | DIGITAL | | | | | | | ANALOG | | | | | | | DIGITAL | | | | | | ANALOG | | | | | | | | | |
| | CONTROL RELAY | | | | | | | POSITION ADJUSTMENT | | | | | | | AUXILIARY CONTACT<br>CURRENT SENSING RELAY | | | | | | TEMPERATURE<br>% RELATIVE HUMIDITY<br>CO2 | | | | | | | CONTACT CLOSURE | | | | | | | HIGH LIMIT<br>LOW LIMIT | | RUN TIME | | | | | SCHEDULED START/STOP<br>OPTIMUM START/STOP<br>DUTY CYCLING<br>DEMAND LIMITING<br>DAY/NIGHT SETBACK<br>ECONOMIZER<br>VENTILATION/RECIRCULATION<br>FAILURE MODE ** |
| SUPPLY FAN AHU-1 | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | X | | | | | | | | | X | | | | | | | X X X X X X F |
| COOLING COIL LAT | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| SUPPLY AIR TEMPERATURE | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| COOLING COIL VALVE | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | F |
| REHEAT COIL VALVE | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | O |
| CO2 | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | X X | | | | | | |
| SPACE TEMP | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | X X | | | | | X | |
| SPACE RELATIVE HUMIDITY | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | X X | | | | | X | |

** C - LAST COMMAND
H - HIGH VALUE
L - LOW VALUE
O - ON (OPEN)
F - OFF (CLOSED)

US ARMY CORPS OF ENGINEERS SAVANNAH

| SYMBOL | DESCRIPTION | DATE | BY |
|---|---|---|---|

DATE: 25 JAN 2010
SOLICITATION NO: W912HN-09-R-0018
CONTRACT NO:
CATEGORY CODE: 730-46-01
PLOT DATE:
DESIGNED BY: REL
DWN BY: REL
CKD BY: TAM
SUBMITTED BY:
FILE NAME: BHM-602
SIZE: 34x22
PLOT SCALE: 1.5=1.0"

U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH DISTRICT

LS3P ASSOCIATES LTD.
205 ½ KING STREET
CHARLESTON, SC, 29401

ALBRITTON JUNIOR HIGH SCHOOL ADDITION
FT BRAGG NORTH CAROLINA

# HVAC CONTROLS
# TYPICAL FAN COIL

PLATE REFERENCE NUMBER
MI602
SHEET 81